Postdeployment Behavioral Health Screening: Face-to-Face Versus Virtual Behavioral Health Interviews

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ABSTRACT Virtual behavioral health (VBH) services are used frequently to address the high demand for behavioral health (BH) services in the military. Few studies have investigated the relationship between the use of VBH services and BH outcomes or preferences for the use of VBH technologies. In this article, we evaluated BH interviews conducted via video teleconferencing (VTC) or face-to-face in terms of BH symptoms, satisfaction rates, stigma, barriers to care, and preferences for future use of BH care. Soldiers (n = 307) from the headquarters element of an operational unit were surveyed 4 months following a 12-month deployment to Iraq. There were no significant differences in satisfaction rates based on interview modality, but significantly more soldiers preferred face-to-face interviews over VTC interviews in the future. Soldiers who preferred face-to-face interviews also reported higher levels of anxiety and depression symptoms than those who preferred VTC interviews. No significant age differences were found in terms of interview modality satisfaction or preference. Soldiers with greater deployment experience were more likely to report that they would not like using VTC if seeking BH care in the future than soldiers with less deployment experience. These findings highlight the importance of promoting choice in type of BH interview modality.

INTRODUCTION

The negative consequences resulting from combat exposure have been well documented.[1–4] Research has demonstrated that mental health problems are more frequently reported 3 to 4 months following return from a combat deployment than immediately upon return.[1] Findings such as these served as the foundation upon which the Department of Defense established the Post-Deployment Health Reassessment program.[5] More recently, Congress expanded the requirement for mental health assessments to include the provision of a person-to-person mental health assessment for each service member deployed in connection with a contingency operation throughout the Army Force Generation cycle including predeployment, in-theater, reintegration, and annually up to 24 months after redeployment.[6]

In an effort to respond to this requirement, the Army Medical Department has explored the use of virtual behavioral health to maximize the availability of behavioral health resources and to provide behavioral health services in support of combat soldiers across the deployment cycle. For example, the U.S. Army Medical Department introduced a Virtual Behavioral Health Pilot Program at Tripler Army Medical Center (Schofield Barracks, Hawaii) in October 2009 to screen and assess soldiers returning from deployment.[7] Findings indicated that postinterview satisfaction was extremely high (>95% satisfied) for all soldiers studied and did not differ for soldiers receiving interviews face-to-face versus interviews conducted with behavioral health providers via videoconference or via webcam (Defense Connect Online).[7] However, in cases where soldiers received face-to-face interviews, an overwhelming majority (91%) said that they preferred face-to-face interviews, whereas fewer soldiers (approximately two-thirds) receiving virtual interviews preferred virtual modalities.

In addition to piloting the use of virtual behavioral health technologies at postdeployment, the Army is running a pilot telebehavioral health project in Afghanistan to identify user satisfaction and behavioral health care access rates of soldiers deployed to remote locations.[8] Preliminary results from the pilot study indicate a high level of overall satisfaction (87%) with behavioral health care provided using virtual technologies. Approximately half of soldiers who received behavioral health care via virtual technologies in theater indicated a preference for receiving behavioral health care in person. Similarly, approximately half of the soldiers surveyed indicated that they would feel more comfortable receiving behavioral health care in person. Unfortunately, conclusions about these results are limited by the small sample size (n = 23), by the lack of comparable information from a face-to-face control group, and by a lack of information about whether or not soldiers were given a choice in the type of behavioral health care they received.

The use of virtual behavioral health screenings with soldiers returning from a 12-month deployment to Iraq has also been evaluated by the Europe Regional Medical Command Telemedicine Program. Soldiers were given the option either to receive their behavioral health screen during reintegration by a provider using video teleconferencing (VTC) or to receive their interview by a provider in a traditional face-to-face interview. Thirty percent of soldiers (n = 249)

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The views expressed in this manuscript are those of the authors and do not necessarily represent the views of the U.S. Army or Department of Defense.

Report Documentation Page

Form Approved
OMB No. 0704-0188

1. REPORT DATE	2. REPORT TYPE	3. DATES COVERED
2012		**00-00-2012 to 00-00-2012**

4. TITLE AND SUBTITLE	5a. CONTRACT NUMBER
Postdeployment Behavioral Health Screening: Face-to-Face Versus Virtual Behavioral Health Interviews	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S)	5d. PROJECT NUMBER
	5e. TASK NUMBER
	5f. WORK UNIT NUMBER
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) **US Army Medical Research Unit?Europe,Walter Reed Army Institute of Research, Nachrichten Kaserne,Karlsruher Strasse 144, 69126,Heidelberg, Germany, ,**	8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSOR/MONITOR'S ACRONYM(S)
	11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release; distribution unlimited

13. SUPPLEMENTARY NOTES
MILITARY MEDICINE, Vol. 177, No. 5, May 2012

14. ABSTRACT

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT **unclassified**	b. ABSTRACT **unclassified**	c. THIS PAGE **unclassified**	**Same as Report (SAR)**	**7**	

elected to receive the interview by VTC, with 90% completing a 12-item anonymous postinterview survey to assess satisfaction with their VTC interview. Overall, 97% of the soldiers were satisfied with their telemedicine appointment and 99% reported they would be likely to use telemedicine again in the future. Although 98% endorsed feeling comfortable during their telemedicine appointment, 22% reported that they would not feel comfortable sharing everything with the provider and would feel more comfortable speaking to them face-to-face. Unfortunately, comparable information about satisfaction with face-to-face interviews was not collected.

In the present study, we conducted a 4-month follow-up study—with the same unit evaluated by the Europe Regional Medical Command Telemedicine Program—to evaluate the long-term differences associated with behavioral health interviews conducted via VTC or face-to-face. Although many studies indicate high satisfaction levels with telemedicine in general, there are caveats to relying solely on patient and provider satisfaction when evaluating the use of telemedicine.[9] Thus, the present study builds on previous efforts by focusing not only on satisfaction rates, but also on differences in mental health outcomes based on interview type. The study also includes an assessment of perceptions of behavioral health stigma and barriers to care, as well as preferences for future use of behavioral health care to determine the influence of treatment modality on these outcome measures. Demographic differences and combat experiences are considered as potential variables that may affect preference for and satisfaction with type of behavioral health interviews.

TABLE I. Demographic Characteristics

	At Reintegration (N = 718)	At 4-month Follow-up (N = 307)	χ^2	p
Rank				
E1–E4	32.9%	30.7%	0.45	0.50
E5 and Higher	67.1%	69.3%		
Unit[a]				
1	38.4%	24.6%	20.59	<0.001
2	27.0%	30.6%	0.74	0.39
3	13.1%	24.2%	17.01	<0.001
4	16.6%	16.5%	0.06	0.81
5	4.9%	4.0%	0.46	0.50
Marital Status				
Married	58.5%	60.9%	0.52	0.47
Single	41.5%	39.1%		
		Mean (SD)		
Years Married		7.21 (6.35)		
Years in the Military		9.81(6.99)		
Age Range (%)				
18–24		22.2%		
25–29		24.2%		
30–39		35.3%		
≥40		18.3%		
Total Months Deployed		22.2 (12.55)		
Total Deployments (>30 Days)		2.58(2.74)		
Gender (% Male)		87.6%		
Combat Exposure		1.90 (2.64)		

[a]Unit names have been removed and replaced with 1 to 5 to preserve the confidentiality of the units.

METHOD

Participants and Procedure

Soldiers from the headquarters element of an operational unit were surveyed 4 months following a 12-month deployment to Iraq as part of a larger study on the reintegration process. Of the 466 soldiers available at the time of data collection, 335 attended the study overview brief and 307 provided informed consent to participate in the research study (91.6%). Participation involved completing an anonymous survey that took approximately 45 minutes to complete. The study was approved by the Institutional Review Board of the Walter Reed Army Institute of Research.

Demographic characteristics of the sample are provided in Table I. In addition, the sample of soldiers who participated in the study was compared to demographics of the unit at the time of reintegration (4 months earlier). As is typical in military units,[10] many soldiers who deployed with the unit had already transitioned to other assignments and were not available to participate in the study. Nevertheless, those sampled at 4 months postdeployment did not differ from the unit at reintegration in terms of gender or rank, as shown in Table I. Three of the five companies sampled were representative of the population of soldiers who reintegrated with the unit. Of the two remaining companies, one was oversampled and the other was undersampled. Taken together, the total sample at the 4-month time period was reasonably representative of the population of soldiers who participated in the initial reintegration process.

Behavioral Health Interview Process at Reintegration

The Europe Regional Medical Command Telemedicine Program conducted face-to-face or virtual (VTC) behavioral health interviews for each member of the unit at reintegration. Eight behavioral health providers conducted face-to-face interviews and five behavioral health providers conducted VTC behavioral health interviews. All behavioral health interviews were conducted in private rooms (for face-to-face interviews) or sound-proof booths (for VTC interviews). For the VTC behavioral health interviews, high-definition cameras that afforded a clear view of facial expressions were used at the soldier site (Polycom HDX 9002 PC, Pleasanton, California) and at the remote site where the provider was located (Polycom HDX 4000 EXEC Desktop, Pleasanton, California). Given a choice of a face-to-face or VTC behavioral health interview, approximately 30% of the soldiers chose a virtual interview. All other aspects of the behavioral health screening process were the same regardless of modality (e.g., provider access to patient information, soldier access to follow-up care and resource lists). At the end of both types of behavioral health interview session, a member

of the clinic staff checked with the provider who conducted the interview to see if the patient needed a follow-up appointment right away, within 7 days, when they returned from block leave, or not at all. The provider who conducted the VTC or face-to-face interview was also available by telephone for follow-up, if needed.

Measures

Demographic Characteristics

Participants provided basic demographic information about their age, gender, marital status, years married, rank, unit, total months deployed, and number of deployments.

Combat Exposure

Combat exposure was assessed with the 34-item Combat Experiences scale.[2] The possible range of scores is from 0 to 34 with higher scores indicating more exposure to combat experiences (e.g., "encountering sniper fire," "having a buddy shot or hit who was near you"). As reported in Table I, combat exposure in this sample was low (mean = 1.9) with 23% of the sample reporting no combat events during their deployment, 37.7% reporting 1 type of event, 19.0% reporting 2 types of events, and 20.3% reporting 3 or more different types of events.

Evaluation of the Behavioral Health Interview

Four items assessed soldiers' experiences with their behavioral health interview. Soldiers were asked whether they received a VTC or face-to-face interview, what type of interview they would prefer in the future, and if they would like to receive care by VTC if seeking behavioral health care. In addition, soldiers were asked to rate how satisfied they were with their behavioral health interview at reintegration (1 = very dissatisfied, 2 = dissatisfied, 3 = somewhat satisfied, 4 = satisfied).

Post-Traumatic Stress Disorder Symptoms

The 17-item Post-Traumatic Stress Disorder (PTSD) Checklist (PCL)[11,12] was used to assess PTSD symptoms. Participants rated symptoms in the last month on a 5-point scale (1 = not at all, 5 = extremely) with possible scores ranging from 17 to 85. This measure has been validated and widely used in military samples.[13] Internal consistency was high ($\alpha = 0.95$).

Depressive Symptoms

The 9-item measure of depression from the Patient Health Questionnaire (PHQ)[14] was used to assess depressive symptoms. Participants rated symptoms in the last month on a 4-point scale (1 = not at all, 4 = nearly every day). The mean score of the 9 items was computed (range 1 to 4) and internal consistency was high ($\alpha = 0.88$).

Anxiety Symptoms

The 7-item measure of general anxiety disorder symptoms (GAD-7) was used to assess anxiety symptoms.[15] Participants rated symptoms in the last month on a 4-point scale (1 = not at all, 4 = nearly every day). The mean score of the 7 items was computed (range 1 to 4) and internal consistency was high ($\alpha = 0.95$).

Alcohol Problems

An 8-item scale was used to assess alcohol problems. Three items assessed alcohol consumption (quantity, frequency, and binge drinking; Alcohol Use Identification Test- Consumption scale [AUDIT-C][16,17] and 5 items assessed alcohol-related problems (e.g., "Did you drive after having several drinks, "Have you been late or missed work because you were drinking or hung over"). Possible scores ranged from 0 to 18 with higher scores indicating more alcohol problems. This measure has been used in previous studies with military samples.[18]

Behavioral Health Stigma and Barriers to Behavioral Health Care

Scales used in previous studies[2,19] assessed stigma (6 items, e.g., "I would be seen as weak") and barriers to care (6 items, e.g., "Mental health services aren't available"). Participants were asked to rate the degree to which each of the concerns might affect their decision to receive mental health counseling or services if they ever had a problem. Each item was assessed with a 5 point scale (1 = strongly disagree, 5 = strongly agree) with higher scores indicating more stigma or more barriers to care. Internal consistency was excellent for both stigma ($\alpha = 0.94$) and barriers to care ($\alpha = 0.93$).

RESULTS

Approximately one-third of the sample reported receiving a VTC behavioral health interview at reintegration (VTC: n = 99, 33.2%; face-to-face: n = 171, 57.4%), which is consistent with the population surveyed by the Europe Regional Medical Command Telemedicine Program at reintegration. A small subset of soldiers did not remember what type of interview they had received 4 months prior (n = 28; 9.2%) and were excluded from subsequent analyses. Demographic characteristics (rank, marital status, unit, years married, years in the military, age, total months deployed, total number of deployments, gender, and combat exposure rates) of the VTC and face-to-face group were compared, and there were no significant differences between the groups.

Rates of Satisfaction with Behavioral Health Interview

Most soldiers reported they were "somewhat satisfied" or "satisfied" with the behavioral health interview they received (90.9% VTC; 84.7% face-to-face). Note that satisfaction rates measured during this study were not as high as the rates initially reported by the Europe Regional Medical Command Telemedicine Program at reintegration (based on the results of a Patient Satisfaction Exit Survey given to soldiers who participated in the VTC screen).

Group Differences in Satisfaction, Mental Health Symptoms, Stigma, and Barriers to Care

Independent *t*-tests were conducted to examine differences in satisfaction with behavioral health interviews, mental health problems, stigma, and barriers to care reported at 4 months postdeployment between soldiers receiving VTC or face-to-face interviews. Results are presented in Table II. There were no significant differences between the two groups on satisfaction with the behavioral health interview, mental health symptoms, stigma concerning behavioral health care, or barriers to behavioral health care.

Future Preferences for Behavioral Health Services

Although there were no statistically significant differences in satisfaction or mental health symptoms between soldiers receiving VTC or face-to-face interviews, there were differences in their preferences for future behavioral health interviews ($\chi^2(2) = 105.95$, $p = 0.000$) and future behavioral health care ($\chi^2(2) = 52.3$, $p = 0.000$). Future behavioral health interview and behavioral health care preferences based on the modality of behavioral health interview received at reintegration (VTC versus face-to-face) are illustrated in Figures 1 and 2, respectively. Only a minority who received VTC reported preferring VTC as a modality for future behavioral health interviews (27.0%) or for behavioral health care (16.0%), with most reporting no preference for either. However, the majority who received face-to-face reported preferring face-to-face in the future for both behavioral health interviews (69.3%) and for behavioral health care (53.4%).

Lastly, we examined whether there were any significant differences in demographic characteristics, mental health symptoms, or satisfaction with the behavioral health interview based on preferences for future behavioral health interview or behavioral health care. There were, however, no demographic differences between soldiers who preferred a face-to-face interview, VTC interview, or soldiers who had no preference ($t > 2$; *ns*). In contrast, soldiers who reported they would not like using VTC if seeking future behavioral health care had more deployments and total months deployed since September 2001 (mean number of deployments = 3.16, $n = 107$; $p = 0.042$, mean months deployed = 24.27, $n = 107$; $p = 0.025$) than soldiers with no preference (mean number of deployments = 2.26, mean months deployed = 20.14, $n = 134$). No other significant differences emerged (e.g., for rank, age, years in the military, etc.). Results comparing differences in mental health symptoms and satisfaction with behavioral health interview as a function of preferences for future behavioral health services are presented in Table III. Soldiers with higher levels of depressive and anxiety symptoms were more likely to report a preference for future behavioral health interviews to be face-to-face. Groups did not differ on other outcomes.

TABLE II. Group Differences in Satisfaction and Mental Health Symptoms Reported 4 Months Postdeployment Based on Modality of Behavioral Health Interview Received at Reintegration

	Received VTC Interview ($n = 99$), M(SD)	Received F2F Interview ($n = 171$), M(SD)	*t*	*p*
Satisfaction With Behavioral Health Interview	3.45 (0.77)	3.30(0.89)	–1.45	0.147
PTSD Symptoms	22.53(8.91)	22.46(8.34)	–0.058	0.953
Depressive Symptoms	1.26 (0.36)	1.28(0.40)	0.369	0.712
GAD Symptoms	1.30(0.50)	1.32(0.51)	0.357	0.721
Alcohol Problems	4.23 (2.81)	4.42(2.88)	0.634	0.612
Stigma	2.48 (0.97)	2.41(0.95)	–0.618	0.537
Barriers to Care	1.93(0.81)	1.85(0.77)	–0.720	0.472

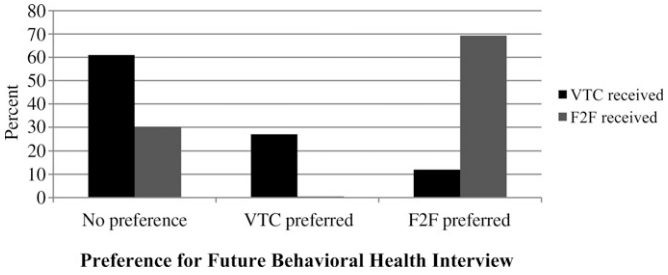

FIGURE 1. Preferences for virtual (VTC) versus face-to-face (F2F) behavioral health interview by type of interview received at reintegration.

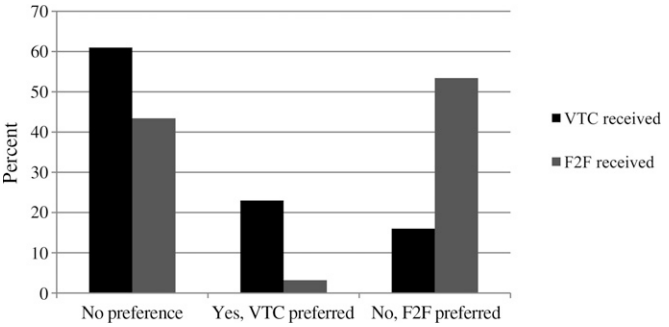

FIGURE 2. Preferences for virtual (VTC) versus face-to-face (F2F) behavioral health services by type of interview received at reintegration.

DISCUSSION

In the present study, we compared soldiers who received VTC and face-to-face behavioral health interviews immediately upon redeployment from Iraq on a variety of outcome measures collected 4 months postdeployment. Consistent with previous research,[9] satisfaction rates with both VTC and face-to-face behavioral health interviews did not differ since the majority of soldiers reported being satisfied with their behavioral health interview. Overall, there were no significant differences as measured at 4 months postdeployment in mental

TABLE III. Group Differences in Satisfaction and Mental Health Symptoms Reported 4 Months Postdeployment Based on Modality for Future Behavioral Health Services Preferred

Future Behavioral Health Interview	Preferred VTC, M(SD) $n = 28$	Preferred F2F, M(SD) $n = 143$	No preference, M(SD) $n = 130$	F	p
Satisfaction With Behavioral Health Interview	3.36(0.95)	3.24(0.96)	3.40(0.78)	1.22	0.298
PTSD Symptoms	21.87(10.81)	24.50(11.50)	22.53(8.61)	1.93	0.147
Depressive Symptoms	1.15(0.24)[a]	1.37(0.49)[a]	1.29(0.41)	3.14	0.045
GAD Symptoms	1.15(0.29)[a]	1.43(0.60)[a]	1.31(0.52)	3.45	0.033
Alcohol Problems	3.75(2.82)	4.53(3.09)	4.60(2.94)	0.94	0.387
Stigma	2.40(0.88)	2.43(0.99)	2.58(1.04)	0.942	0.391
Barriers to Care	1.95(0.87)	1.84(0.75)	1.93(0.83)	0.586	0.557
Future Mental Health Care	$n = 30$	$n = 121$	$n = 150$		
Satisfaction With Behavioral Health Interview	3.23(1.04)	3.19(0.93)	3.44(0.79)	2.93	0.055
PTSD Symptoms	23.74(15.14)	24.11(10.60)	23.00(8.87)	0.39	0.678
Depressive Symptoms	1.30(0.65)	1.34(0.57)	1.30(0.39)	0.361	0.697
GAD Symptoms	1.29(0.65)	1.37(0.57)	1.35(0.51)	0.218	0.805
Alcohol Problems	3.70(3.30)	4.43(3.00)	4.69(2.93)	1.41	0.245
Stigma	2.38(0.96)	1.03(0.09)	2.52(0.99)	0.281	0.755
Barriers to Care	2.17(0.94)	1.85(0.75)	1.87(0.79)	2.05	0.131

[a]Groups significantly different, $p < 0.05$.

health symptoms, barriers to behavioral health care, or stigma toward behavioral health care based on interview modality.

There were, however, significant differences in mental health symptoms reported based on future preference for behavioral health interview modality. Soldiers who preferred future behavioral health interviews be conducted in person reported significantly higher symptoms of depression and anxiety than soldiers who preferred interviews be conducted via VTC. Although the majority of those who received face-to-face interviews said they would prefer face-to-face interviews in the future (69.3%), the majority of those who received VTC interviews had no preference for interview modality. It is unclear why individuals with higher anxiety and depressive symptoms prefer behavioral health interviews be conducted in person, but these findings highlight the importance of maintaining a choice in behavioral health interview options whenever possible. It also suggests future research should focus on the reasons for these differences through the use of focus group interviews.

In contrast, there were no differences in mental health symptoms based on soldier preference for future behavioral health care (i.e., seeking treatment). However, soldiers who had deployed longer (total months deployed since September 2001) and more frequently (total deployments since September 2001) did prefer receiving future behavioral health care in person. There were no other demographic differences based on preferences for future behavioral health care (e.g., age, rank, marital status), which is surprising given the common perception that younger soldiers are more comfortable with technology than older soldiers. Although there were no differences in combat experiences reported for the current deployment, it is possible that cumulative combat exposures may explain the differences in reported preferences observed.

An additional consideration for interpreting these findings is that participant history in using telemedicine was not measured. It may be that one's preference for future behavioral health interview modalities may depend on familiarity and experience with virtual technologies in general. One's preferences for a virtual experience may be influenced by the experience itself. Individuals who received face-to-face interviews may never have received a virtual interview given that it is used less frequently, whereas those who had virtual interviews are likely to have had face-to-face interviews allowing them to compare the two modalities. More research that uses random assignment to either face-to-face or VTC approaches may be required to elucidate further the impact of experience with virtual technologies on preferences for telemedicine use in the future.

In terms of generalizability of the present findings, it should be noted that rates of combat exposure in this headquarters unit were low compared to levels seen in other units previously studied.[2,20] For example, 9.2% of the soldiers in the current study reported having engaged in a firefight, whereas 50% of the soldiers in a previous study of soldiers who deployed to Iraq in 2006 reported having engaged in a firefight.[20] Similarly, soldiers in the current sample reported experiencing 1.9 combat exposures on average, whereas soldiers in another study of soldiers who deployed to Iraq in 2007–2008 reported experiencing 14.6 combat exposures. In addition, the current sample reported fewer mental health symptoms than would be expected from a unit experiencing higher levels of combat. Thus, collecting similar data in units that experience higher levels of combat is required to understand fully the impact of combat exposure (and higher levels of mental health symptoms) on preferences for behavioral health care delivery.

There are additional outcomes that are important factors in program evaluation that should be included in future studies of telebehavioral health. In particular, such studies should evaluate differences in referral rates and use of behavioral

care services. Although there were no differences in mental health symptoms based on preference for future behavioral health care in this sample, this finding may be related to overall low levels of mental health symptoms reported and, in turn, perceived low demands for future mental health services. Thus, the importance of future studies to evaluate preferences for treatment using samples with higher levels of combat and higher rates of mental health symptoms remains critical for assessing any behavioral health care delivery program. In conclusion, the findings of this study suggest VTC technologies are promising, but implementation must be done carefully and substantive differences between modalities should be addressed systematically to ensure high quality of care.

ACKNOWLEDGMENTS

We thank Steven Terry, Rachel Eckford, Victor Martinez, Angela Salvi (Lead Research Associate), Amy Adler, and Lyndon Riviere. This study was funded by the Military Operational Research Program, U.S. Army Medical Research and Materiel Command.

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